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The Journal of **The Biblical Creation Society**

Origins 56

Editorial:

A brief history lesson

One of the benefits of living here in Britain, AD 2012, is the sheer volume of information most of us are privileged to have access to. Our age may be defined by two things – information and global commerce. This observation was foretold in the book of Daniel 12:4 some five hundred years before the Lord's birth. Writing in 1991, the same year in which the very first Internet 'web page' came online, Dr. Henry Morris wrote: "…knowledge shall be increased" – could well be translated 'science shall be increased,' for the two words are synonymous in meaning and derivation." Just two decades have passed since this was written and yet the Internet is now estimated to contain almost one yottabyte (1YB) of information – much of it scientific. To give some idea of how large a quantity this is, you would need at least a trillion (i.e. 1,000,000,000,000) terabyte hard-drives to carry this volume! And yet not a day goes by when the Internet doesn't grow even larger! The mind literally boggles!

When we dig deeper, however, a remarkable fact emerges. It is not the quantity of information that matters, nor the speed with which it can cross the globe to us. Rather, it is the *quality* of information – the small gems of truth, the hidden pearls of faithful knowledge – that really matter. And in many instances, these are very difficult to obtain even today! This struck me recently through a number of learning experiences. First, I came to realise just how far modern historical scholarship has led us *away* from the true history contained God's Word – the Holy Bible. Recently, attempting to seek out and read some Protestant histories of the world proved totally impossible, simply because they have lain neglected for centuries and have not been translated from their original languages. This taught me that although we may seem to have come far in knowledge since the Reformation, in many cases virtually no progress has been made due to the relentless juggernaught of unbelieving 'scholarship' which swept across the world during the 16th – 19th centuries. This juggernaught continues unabated today. Countless gems of historical and scientific truth have no doubt been crushed under its persecuting wheels and long since forgotten! We need a new Renaissance!

Second, it came as rather a shock to find that my small, fully referenced addition to a *Wikipedia* article on the structure of the Genesis creation narrative was repeatedly deleted (almost immediately after uploading) by other editors. This relentless censorship of a small, seemingly uncontroversial, fully referenced insight awoke me from my dogmatic slumber regarding Wiki's value as a repository of knowledge. Perhaps for those who have time on their hands, Wiki's discussion pages are useful for coming to some mutual resolution over the veracity of article content. Thankfully, there are many treasures now freely available on the web encyclopaedia *Creation Wiki* and I would encourage readers with expertise to add to this fantastic resource to make it even more polished and valuable.

My final learning experience is a sad and burdensome tale concerning wilful ignorance over Genesis 1-11 in the visible church. A number of books were published last year (by Theologians and apologists) which have muddied the waters over creation and could easily lead to future dissention through their unfaithful approaches to biblical interpretation. This is nothing new, of course, it has continued for decades this way. Yet the point was hammered home to me late last year through a debate in Westminster between a famous Christian apologist and an atheist Professor from Oxford. When the apologist was challenged about the sheer volume of evil, pain, suffering and violence in the world, he had no biblical answer. The most he could muster was that the billions of creatures he took as massacred, torn, drowned, burnt and hurled to their deaths, over hundreds of millions of years, (presumably so-called 'hominids' included) would not have been 'consciously aware' of their torment and agony – so God's Name was in the clear. Such an answer clearly twists the Holy Scriptures, which declare Eden a very good vegetarian *paradise* (Gen.1:30), *all flesh* to have corrupted itself after the Fall (Gen. 6:13), and God's *permission* for restricted human omnivory only *after* the Cataclysm of Noah's time – when a nutritious vegetarian diet was no doubt hampered by climate, soil and floral biodiversity loss (Gen. 9:3-5). This isn't reading too much into Scripture, it is simply drawing on the straightforward reading adopted by the vast majority of readers before Darwin's seeds of doubt were sown.

During 2012, therefore, as we continue to do fierce battle with atheists, humanists and liberals over the duties of state education with regard to the biblical worldview, let us remember that only in the Triune God, and Christ the Mediator of the New Covenant, are found "all the treasures of wisdom and knowledge" (Col. 2:3). Let us strive against iniquitous knowledge (falsely so-called), confident that God's word is pure and Christ has secured certain victory through his glorious death and resurrection!

James Powell

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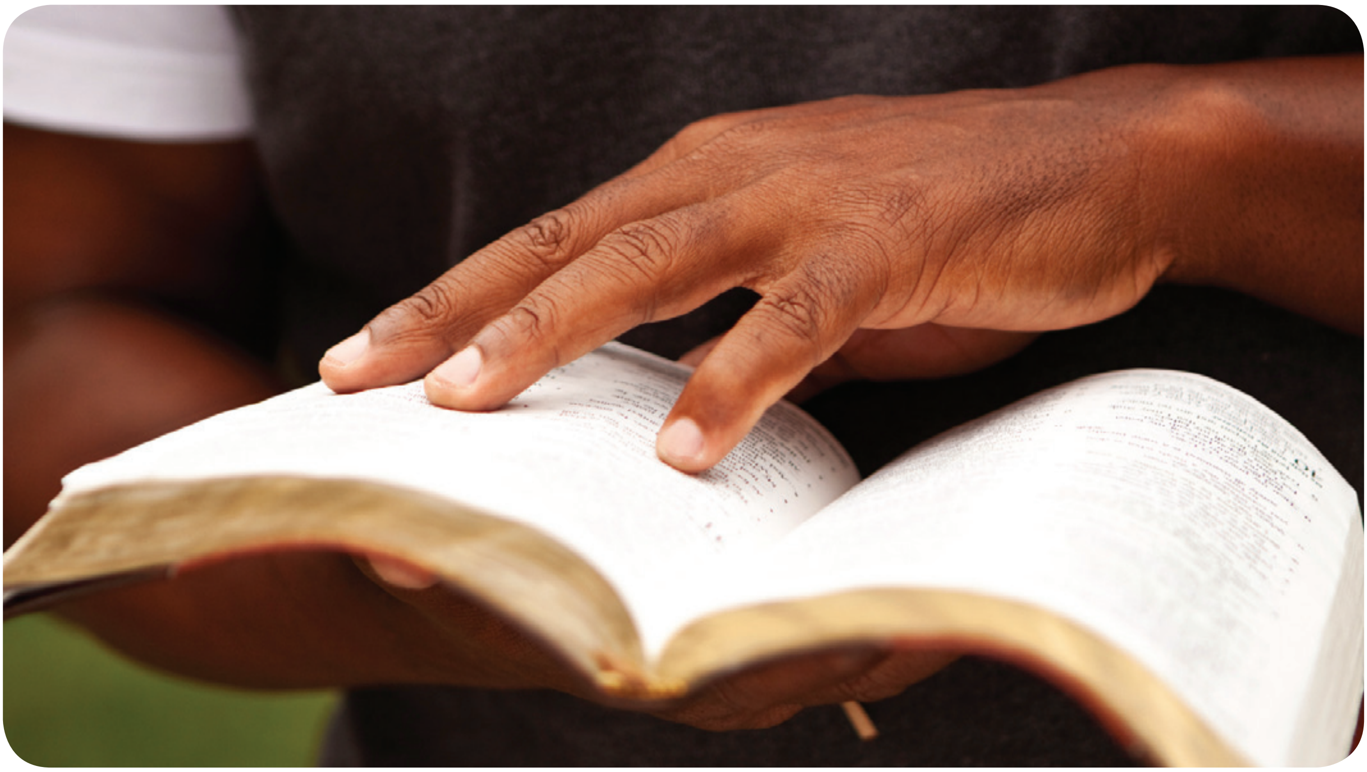
Adam: the Priest-King of Genesis 1 to 3

Ray Trainer

When we come to read and study Genesis 1 to 11 it is important for us to realise that the Bible is, first and foremost, not about science or history but about theology. Though the stories found within these early chapters of Genesis are certainly true and accurate, yet their primary purpose is theological. Therefore, if we place too much emphasis on the science and history underlying Genesis 1 to 11, we can be in danger of an imbalanced exegesis. In fact this is true of all portions of Scripture which document historical events for us whether from Genesis or elsewhere within the Bible. The *primary* intent of the authors of these accounts is not to record reliable information concerning what happened, which of course they do, but to bring out theological truth relating to the overarching storyline of the Bible.

> “Effectively Adam and Eve were to extend the boundaries of the Garden of Eden until the temple-garden covered the whole earth …”

Now the Bible, though written over many hundreds of years by numerous human authors, is one book with one divine author and one overall subject. That subject is: “Jesus Christ and the salvation God offers through him” (Roberts, 2002:7); see also Luke 24:25-27, 44; 2 Corinthians 1:20; 2 Timothy 3:15f). The unity of the Bible – that it is indeed one book – can be clearly seen when we compare Genesis 1 to 3 with Revelation 20 to 22. In doing so we find that ideas and themes introduced to us within the account of the first creation are brought to completion within the account of the second creation. In other words, those early chapters of Genesis and those final chapters of Revelation *frame* the entire Bible (Alexander, 2008:10). With that in mind, my intention in this article is to consider two of those biblical themes



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or ideas. The first theme concerns God's presence with his people on earth. The second theme is about God's sovereignty over all things.

Adam: priest of God in the garden-temple

We shall begin with the first of those two themes. In the early chapters of Genesis we see that God's purpose is to dwell with his people on earth. The evidence for this is not so much that God walked in the Garden of Eden with man (Genesis 3:8f), but that the Garden of Eden itself was a temple and Adam a priest of God. Of course, that Eden was a temple-garden is a significant claim to make, so let me attempt to show that it is true. The evidence is not incontrovertible but rather cumulative! I shall only give brief explanations. For more detailed arguments see the referenced books by Greg Beale (2004:66-76), Desmond Alexander (2008:20-31), and John Fesko (2007: 57-75).

First, the river flowing from Eden reminds us of the river flowing from Ezekiel's temple (Genesis 2:10; Ezekiel 47:1-12). More importantly this reveals that Eden was elevated. In fact Ezekiel describes Eden as a holy mountain of God, which is a common designation and truth concerning temples (Ezekiel 28:13-16; Exodus 3:1; 18:5; 24:13; Psalm 48:1f; Hebrews 12:22; Revelation 21:10). Second, the lampstand within the tabernacle in the desert and Solomon's temple clearly symbolises the tree of life from the Garden of Eden. In addition, Solomon's temple was decorated with palm trees, open flowers, pomegranates and lilies–again pointing back to the Garden of Eden (Genesis 3:16f; 1 Kings 6:18, 29, 32; 7:18-22; see also Ezekiel 41:17-26; 47:12; Revelation 22:1f). Third, precious stones and metals are extensively used to decorate later temples (for example Exodus 25:7, 11, 17, 24, 39, 31, 36; 28:17-20; 1 Kings 6:20; see also Ezekiel 28:13; Revelation 21:18-21). These precious stones and metals are also reminiscent of Eden (Genesis 2:10-14). Fourth, God dwells with his people in the temple-garden as he does in later temples (Genesis 3:8; Exodus 40:34f; Leviticus 26:11f; 2 Samuel 7:6f; 1 Kings 8:10f).

There are other similarities I could mention, but let me give just one more argument. In Genesis 2:15 we read: "The LORD God took the man and put him in the Garden of Eden to work it and take care of it." The Hebrew verbs in that verse translated in the NIV as "to work" and "[to] take care of" are also used together within other passages from the Pentateuch (Numbers 3:7f; 8:26; 18:5f). Significantly, in all those other passages these two verbs describe the priest's responsibilities of guarding and serving within the tabernacle sanctuary (see also Wenham, 1986:19). Therefore it is reasonable to infer that Adam's duties within the Garden of Eden were primarily priestly rather than agricultural! Adam worked in a temple-garden. This truth also sheds light upon God's command to Adam in Genesis 1:28: "Be fruitful and increase in number; fill the earth and subdue it." Effectively Adam and Eve were to extend the boundaries of the Garden of Eden until the temple-garden covered the whole earth; that is, until the whole earth became God's dwelling place with mankind.

However, as we know, Adam fell. He and Eve were expelled from the Garden and driven away from God's presence, but the Bible story continues with this theme of God's presence on earth with mankind. First, in the incident of the Tower of Babel mankind is attempting to reverse God's plan (Genesis 11:1-9; see also Alexander, 2008:29-30). At Babel mankind's goal is to get to heaven and avoid filling the earth. Second, the tabernacle among Israel in the Sinai desert appropriates Eden's role as the location where God dwells with his people (Alexander, 2008:32-42). Therefore Israel–unlike the rest of mankind–enters into and is included within God's plan as laid out at the beginning of this world. The three parts which made up the tabernacle may also be seen as a model of the universe as a whole (Beale, 2004:29-50). This would imply that the tabernacle is a reminder to Israel that God's presence would eventually fill the whole world. In other words the tabernacle is a foretaste of something better to come.

Third, the tabernacle is replaced by Solomon's temple (Alexander, 2008:42-48). Indeed, as we see from many of the psalms, the temple in Jerusalem is extended to include the whole city of Jerusalem as God's dwelling place with his people (for example Psalm 132:13f). However, because of the sin of idolatry and of rejection of God, Israel is judged. The temple is razed. Jerusalem's walls are destroyed. The people are taken into exile, no longer living in God's presence. Fourth, the prophets foretell a restored land and a new temple (Isaiah 2:2-5; Ezekiel 40-48; Zechariah 8:1-8). These extensive prophecies are clearly not fulfilled in the temple built by the Jews on their return from exile in Babylon. In other words these prophecies also point to something better to come.

Fifth, in coming to the New Testament we see that all the temple imagery of the Old Testament is fulfilled in Jesus. John 1:14 tells us that "the Word became flesh and made his dwelling among us." The Greek word εσκηνωσεν (**eskēnōsen**, "made his dwelling") may legitimately be translated "tabernacled". In John 2:21 John tells us that the temple Jesus had spoken of in the previous verse was his body. In John 4:21 Jesus says to the Samaritan woman, "Believe me, woman, a time is coming when you will worship the Father neither on this mountain nor in Jerusalem." Therefore Jesus replaces the temple. Jesus is now God's presence among his people. Jesus is the one to whom we come in order to meet with and worship God. Jesus is the fulfilment of the temple. Sixth, in the present age–now that Jesus has physically ascended into heaven–the temple is his body, the church, indwelt by the Holy Spirit (John 14:16-18; Ephesians 2:19-22). The ever-expanding church is God's residence upon the earth. Seventh and finally, in Revelation 21:1-22:6 we see the completion of God's plan to dwell with his people upon the earth. The holy city of Revelation 21:2 is a temple.[1]

Now that is an extremely brief overview of the Bible's teaching on God's presence with his people on earth, specifically as it relates to the temple. However, what application is there from this truth for us today? Clearly there are many, but let me draw out one immediate application. Notice Adam was to "fill the earth and subdue it" (Genesis 1:28), yet Adam failed. Notice too that Israel was to be "a light for the Gentiles" (Isaiah 49:6), and Israel also failed. In our day the church also is to proclaim the gospel to the ends of the earth and to make disciples of all nations (Matthew 28:18-20; Acts 1:8). In other words the church is to extend God's temple–that is, itself–to every nation and tribe and people and language (Revelation 7:9). The holy city will fill the earth,[2] and God's plan to dwell in the whole world with his people will come to fruition. Therefore the application and challenge for us is straightforward: we, the church, now have Adam's responsibility upon our own shoulders. We are to obey Jesus Christ's command to "make disciples of all nations", to "fill the earth and subdue it", and to extend his temple, the church, "to the ends of the earth". However, in doing so, we also have the promise that he is with us "to the very end of the age".

Adam:
God's vice-regent upon the earth

Who is in charge of this world? The obvious answer to that question is God. Ultimately God has absolute authority over everything because it is self-evident that the creator God, by his nature and power, is King of kings and Lord of lords. God is on the throne. However God's sovereignty is also challenged within this world, and the storyline of the Bible explains why this is so and what the final outcome will be (Revelation 22:1-3). With that in mind, we shall now consider our second theme of God's sovereignty over all things.

> "In Genesis 1 and 2 we see that God, because he is the creator of all things, is the rightful King over everything has made."

In Genesis 1 and 2 we see that God, because he is the creator of all things, is the rightful King over everything he has made. Thus we, his creatures, are to acknowledge God's rule and worship God accordingly (Revelation 4:11). From Genesis 1:26-28 we also see that God has appointed Adam as his vice-regent. This can be seen in two ways. First, it is explicit within the command given to Adam. Humanity is to "rule over the fish of the sea and the birds of the air, over the livestock, over all the earth, and over all creatures that move along the ground." In other words God is setting apart Adam and Eve from every other creature to rule this world on his behalf. They are the pinnacle of creation.

Second, mankind is made in the image of God. Mankind, in a unique way, reveals something of the character, purpose and activity of God. Men and women resemble God in who God is, in his creativity and ability to reason. Men and women resemble God in relationships, in his ability to relate to and communicate with others. Men and women resemble God in what God does, in his dominion over creation. In fact, from the context of Genesis 1, this last aspect of God's image is probably the primary meaning. To clarify: Genesis 1 portrays God as the supreme King who rules over the heavens and the earth. In Genesis 1 creation is harmonious and ordered, perfectly aligning itself with God's rule and purpose. Therefore it is very good (Genesis 1:31). In addition Adam and Eve are created in the image of God. They are created with the special role of reflecting God's rule within this world. They are given a royal status as God's vice-regents. They rule on behalf of God. Thus Adam is not only a priest; he is also a king. Adam is a priest-king within the temple-garden of Eden.

However in Genesis 3 we discover that Satan comes and deceives Adam and Eve, causing them to fall and apparently wrecking God's creation purpose. Effectively Adam and Eve rebel against God's authority and they want to decide for themselves what is right and wrong. They want to be not just like God but as God. It is the ultimate act of betrayal. By becoming Satan's subjects humanity takes sides with God's enemy and now rules not with grace and mercy but with violence and bloodshed. Therefore Genesis 3 is essential for understanding why God's sovereignty is challenged within the world today. Indeed, the rest of the Bible picks up this theme, explaining how God's gracious rule and sovereignty over the world will be restored.

In Genesis 14:18-24 we are introduced to two kings: Melchizedek, the king of Salem, and the king of Sodom. Melchizedek is also a priest. Just like Adam before him he is a priest-king to

God Most High. The king of Sodom is different from Melchizedek. This is seen in how Abraham rejects this king's offer but instead commits himself to Melchizedek. Though Melchizedek acknowledges God's authority over the earth, the king of Sodom merely exhibits a self-promoting desire for wealth. For this king, authority resides only with himself (Alexander, 2008:81-82).

In Exodus 19:5f God himself declares to the newly rescued nation of Israel that they are a royal priesthood. In other words the people of Israel were to become priest-kings. They were to fulfil Adam and Eve's role of obeying God's law and of extending God's rule to the nations (Isaiah 49:6). However Israel fails. After the high-point of the nation's existence under the kingships of both David and Solomon (for example 1 Kings 4:20-34), Israel disintegrates both morally and politically. Even King Solomon himself turns away from God (1 Kings 11:6). The nation declines and is eventually removed from the land (2 Kings 17:7f, 25:26f). This is because Israel was only an imperfect shadow of God's true kingdom. The reality was yet to come.

In the New Testament we find that Jesus, by his life, death and resurrection, establishes God's kingdom (Matthew 4:17). Jesus is God's king, the promised Son of David who will rule over God's kingdom forever (2 Samuel 7:4-16; Matthew 1:1; Romans 1:3). As king, Jesus defeats God's enemies: sin, Satan, and death (John 12:31). In his resurrection Jesus is vindicated by his Father and given universal authority and power (Romans 1:4; Philippians 2:9-11; 1 Timothy 3:16). The subjects of God's kingdom are those, from every nation, tribe, people and language, who acknowledge Jesus' rule within their hearts (Matthew 7:21; Luke 17:20; Revelation 7:9).

Finally, in Revelation 21:1-22:6 we see that there is a time coming when God's absolute rule will be fully established over everyone and everything that exists within this world (see in particular Revelation 22:1-3). In John's final vision of the New Jerusalem there is not only a temple revealing God's presence with his people on the earth but also a throne revealing God's authority over everything upon the earth. This is the climax of world history when God's people will live in perfect conformity to God's will (Zechariah 14:9). Not only that, God's people themselves will reign with Christ (Romans 8:15-18; 2 Timothy 2:12; Hebrews 2:5-9; 1 Peter 2:9).

Again, that is an extremely brief overview of the Bible's teaching on God's throne. However one application is clear. God, as our creator, rightly requires our full allegiance. In addition God the Father has given God the Son, as a man, universal authority and power,[3] and one day every knee will bow to him. The application for all is this: will we bow the knee only then or will we bow the knee today? ■

> "The application for all is this: will we bow the knee only then or will be bow the knee today?"

Footnotes

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[1] Notice in particular the shape of the city (verse 16) and the material from which the city is made (verse 18). Both of these allude to the Most Holy Place of Solomon's temple (1 Kings 6:20).

[2] The size of the holy city in Revelation 21:16, about half-the size of modern-day Europe, would probably cover the known world of New Testament times.

[3] This is the correct understanding of Romans 1:4 where the word translated "declared" in the NIV should be translated "designated" or "appointed". See relevant commentaries by John Murray, Douglas Moo and Thomas Schreiner.

References

Alexander, T. D. (2008). *From Eden to the New Jerusalem: Exploring God's plan for life on earth.* Nottingham, Inter-Varsity Press.

Beale, G. K. (2004). *The Temple and the Church's Mission: A Biblical Theology of the Dwelling Place of God.* Leicester, Apollos,

Fesko, J. V. (2007). *Last Things First: Unlocking Genesis 1-3 with the Christ of Eschatology.* Fearn, Ross-shire: Christian Focus Publications.

Roberts, V. (2002). *God's Big Picture: Tracing the storyline of the Bible.* Downers Grove, Illinois: Inter-Varsity Press.

Wenham, G. J. (1986). *Sanctuary Symbolism in the Garden of Eden Story.* Proceedings of the World Congress of Jewish Studies 9.

The World Around Us: a virtual museum

A new teaching resource www.worldaroundus.org.uk

Geoff Lewis

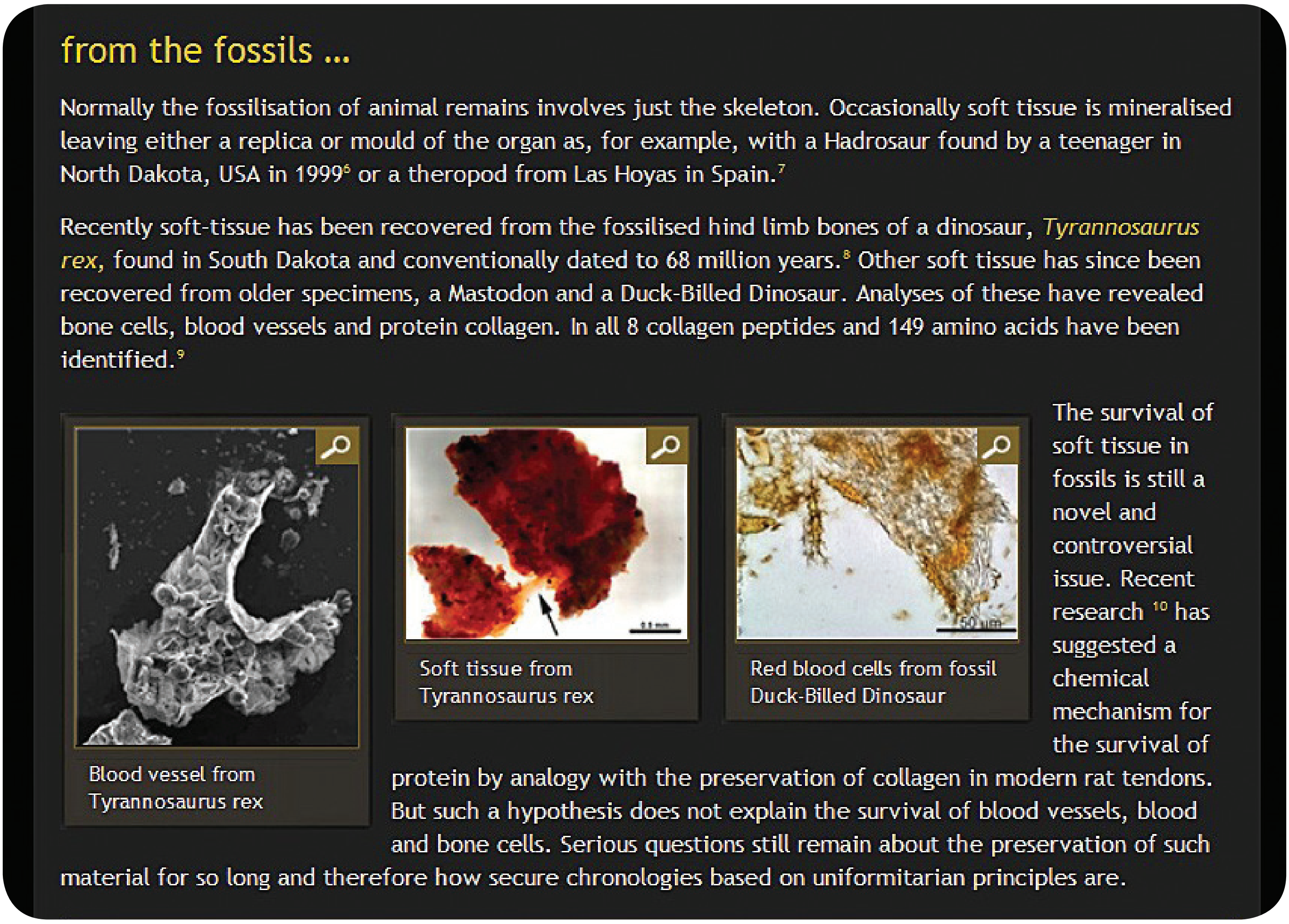
Context

Creationism and intelligent design should be given the same status as evolution in the classroom according to 29% of teachers in a poll by Teachers' TV (2008). While half of those polled considered otherwise, some 89% thought it should be discussed if raised in a science lesson. Such views from the metaphorical 'chalk face' no doubt reflect the reality of the classroom but resources geared to facilitate this are sparse indeed.

Nor are such views confined to teachers. In a survey of the UK population some 27% considered that intelligent design should be taught alongside evolution in science lessons. (Lawes 2009). A recent survey among churchgoers revealed that 61% thought that creationism should be taught as part of science in schools (Village 2011). An even greater percentage believed that it should also feature in Religious Education teaching.

Professor Michael Reiss (2010), a distinguished educationist, estimates that 10-15% of people in the UK accept the record of the Bible or Koran on creation and therefore a similar proportion of state school pupils are likely to believe this. In schools with a strong Christian or Muslim ethos the percentage holding such a belief will be greater; in the Christian Schools Trust member schools, for example, it is as high as three-quarters of the teenage pupils (Baker 2009, Table 7.1).

For a number of years there has



from the fossils ...

Normally the fossilisation of animal remains involves just the skeleton. Occasionally soft tissue is mineralised leaving either a replica or mould of the organ as, for example, with a Hadrosaur found by a teenager in North Dakota, USA in 1999[6] or a theropod from Las Hoyas in Spain.[7]

Recently soft-tissue has been recovered from the fossilised hind limb bones of a dinosaur, *Tyrannosaurus rex*, found in South Dakota and conventionally dated to 68 million years.[8] Other soft tissue has since been recovered from older specimens, a Mastodon and a Duck-Billed Dinosaur. Analyses of these have revealed bone cells, blood vessels and protein collagen. In all 8 collagen peptides and 149 amino acids have been identified.[9]

Blood vessel from Tyrannosaurus rex

Soft tissue from Tyrannosaurus rex

Red blood cells from fossil Duck-Billed Dinosaur

The survival of soft tissue in fossils is still a novel and controversial issue. Recent research [10] has suggested a chemical mechanism for the survival of protein by analogy with the preservation of collagen in modern rat tendons. But such a hypothesis does not explain the survival of blood vessels, blood and bone cells. Serious questions still remain about the preservation of such material for so long and therefore how secure chronologies based on uniformitarian principles are.

Left and centre: Illustrations from Schweitzer M. H. *et al.* (2005) Soft-Tissue Vessels and Cellular Preservation in *Tyrannosaurus rex*. Science 307 1952-1955.
Right: Illustration from Schweitzer M. H. *et al.* (2009) Biomolecular Characterisation and Protein Sequences of the Campanian Hadrosaur *B. canadensis*. Science 324 626.
These are reprinted with permission from AAA S.

been a vocal lobby from humanist and other groups opposed to the teaching of creationism and intelligent design in schools (for an excellent summary see Baker 2009, Section 4.6). As a result government guidance was given to teachers in state schools (DCSF, 2007). This supported teaching different beliefs about origins in Religious Education but indicated that creationism and intelligent design were not part of the science curriculum and should not be taught as science. It did not, however, rule out teaching about these issues should they arise in science lessons.

Michael Reiss, one of the authors of the guidance to schools (see Reiss, 2010), consistently argues for creationism being dealt with in science classes, leaving teachers free to decide whether to raise it with their students or only if the issue arises. The strength of opposition to this view in the Royal Society led to his resignation as its Director of Education in 2008 (See Baker, 2008; 2010). He had this to say recently:

> "Creationism is therefore best regarded … as part of a worldview; part, therefore, of a rich, in part self-referencing, conception of reality that is internally consistent and has very considerable power and force" (Reiss, 2011).

Purpose of the website

The World Around Us virtual museum provides a science resource for secondary school teachers and students. It allows them to take the statutory evolutionary curriculum beyond purely materialistic and naturalistic interpretations. Based mainly on recent discoveries published in mainstream science journals, it also provides an excellent opportunity to demonstrate the strengths and weaknesses of scientific and historical method and how different worldviews influence the interpretation of the evidence.

The emphasis of the site is on the interpretation of the original evidence and, as much original evidence is housed in museums, this led to the idea of creating a virtual museum. The main structure of the site is based on galleries and displays.

> “The Museum has four galleries providing a logical sequence through the site.”

Before the launch of the site in September 2010 the Department for Education was invited to preview it. Positive replies were received from advisors to both the Secretary of State for Education and the Schools Minister.

The Virtual Museum

The Museum has four galleries providing a logical sequence through the site. It assumes that the resource will be used alongside the syllabus and materials supporting evolutionary theory, but these are not a prerequisite. It is intended to provoke discussion with information on recent discoveries published in mainstream science which suggest alternative explanations to those in textbook evolution. The site theme assumes that discussion will take place but does not draw conclusions. Rather it leads the viewer to a multi-disciplinary overview of some of the new challenges to evolutionary theory and suggests, following Kuhn (1962), that this represents a paradigm crisis.

The home page gives immediate access to the four galleries, a feature which applies whichever page you are on. Each gallery has its own connected theme. The orientation gallery sets the scene, identifying the origins of modern evolutionary theory with Charles Darwin. It acknowledges that much of his observation and interpretation was well-founded but suggests that this is not so with the central tenet of his theory, the descent of all life from a universal common ancestor. There follow some cross-curricula sources for teachers and students to evaluate the scientific evidence and think critically about the world around us. To aid this, the knowledge gallery explains how science and history work and the strengths and weaknesses of the methods used.

The main theme of the museum is picked up again in the reorientation gallery with an examination of current views about the world around us. Here you will find the idea of evolution from a universal common ancestor and Darwin's prediction that this would be demonstrated by fossils from the rocks. There are details of the attempts to generate life chemically or identify a source for life from space. Also included is the emphasis placed on morphology to demonstrate biological evolution and the influence that contemporary molecular studies are having on this and the idea of a single hierarchy of life. Critical to Darwin's theory was the need for vast periods of time for life to develop. The 'big bang' theory and the uniformitarian principle that 'the present is the key to the past' provided such time spans. But predictions are not being realised and evidence to falsify theories is appearing.

From this scenario we move to the largest and final gallery. Here the concept of a paradigm crisis is introduced and the gallery bears this name. What then does the fossil record say or not say? The evidence of intermediate forms has not been forthcoming; living fossils testify to little if any change occurring from the remote geological past; where there is evidence of change in living organisms, some of it appears to link closely with environmental and climatic change. Much of the record of the rocks is now recognised to be a story of catastrophes: massive water movement, unprecedented volcanic activity and even extra-terrestrial strikes. Such a change from gradualism or uniformitarianism, from which stemmed the long geological ages, to a world with a catastrophic history raises questions about the basis on which deep time rests. New evidence supporting the need to review this includes the presence of soft tissue in dinosaur bones or the occurrence of radioactive carbon in samples of coal and diamonds which, if conventional dating is used, should long-since have decayed.

But whether we look to the past or the present, is all that we see around us the result of random chance or is it a world of order, design and purpose? Is life the outcome of some chemical reaction or is there more to it? One of the discoveries of molecular biology has been that life is dependent upon information. Information is not generated from material or energy. Molecular biology has also revealed the integral complexity of organisms the parts of which have no separate function and can hardly be regarded as the result of chance. The universe depends on a number of physical constants and laws. They are fine-tuned in a remarkable manner to maintain life on earth while the biosphere shows unprecedented interdependence when examining the land and sea food chains.

One strength of *The World Around Us* virtual museum is that it presents an overview, emphasising the many recent discoveries in mainstream science and across disciplines, challenging conventional evolutionary theory today. The project was developed under the aegis of The Genesis Agendum. It is regarded as a first phase towards a major educational resource which, as funds allow, will be developed both on site and with support materials for use in the classroom. Users are encouraged to provide feedback and offer suggestions at contact@worldaroundus.org.uk. ■

References

Baker, S. (2008). The Michael Reiss affair: should creationism be allowed to enter the classroom? *Origins,* 49, 5.

Baker, S. (2009). *An Investigation of the New Independent Christian Schools: What kind of citizens are they producing?* University of Warwick, PhD thesis (http://wrap.warwick.ac.uk/3115/1/WRAP_THESIS_Baker_2009.pdf)

Baker, S. (2010). 'Creationism in the classroom: a controversy with serious consequences' *Research in Education,* 83(1), 78-88.

Department for Children, Schools & Families (2007). 'Guidance on the place of creationism and intelligent design in science lessons', DCSF (Now removed from the DfE website with the demise of TeacherNet[1])

Kuhn, Thomas (1962). *The Structure of Scientific Revolutions,* University of Chicago Press.

Lawes, Caroline (2009). *Faith and Darwin: Harmony, Conflict, or Confusion?* London: Theos. This report is available at: http://campaigndirector.moodia.com/Client/Theos/Files/FaithandDarwin.pdf (accessed 8 August 2011). The full data set is available at: http://campaigndirector.moodia.com/Client/Theos/Files/TheosFinalFullDataSetDarwinTabsJan09.pdf (accessed 8 August 2011).

Reiss, Michael (2010). 'Should creationism be taught in British classrooms?' *New Statesman,* 6 April 2010.

Reiss, Michael (2011). 'Teachers as journalists?' *Cultural Studies in Science Education,* 6, 469-473.

Village, Andrew *et al* (2011) , *'The Bible, Creation and You' survey 2011 : Report on the initial findings, York St John University, available at:* http://w3.yorksj.ac.uk/pdf/The%20Bible%20Creation%20and%20You%20survey%202011.pdf (accessed 8 August 2011).

Footnote

[1] Teacher TV (2008). Teacher TV was closed down in April 2011. For a brief report on the poll see *The Times,* 7 November 2008; a report critical of the survey sample appeared in *The Guardian,* 7 November 2008 but another survey had already shown similar results, e.g. that 28% of science teachers believed it essential to cover religious beliefs about the origin of life in the classroom (*Times Educational Supplement,* 19 September 2008).

Laryngeal nerve of the giraffe: badly designed?

Nancy Darrall

> "The recurrent laryngeal nerve is a remarkable piece of unintelligent design. The nerve starts in the head, with the brain, and the end organ is the larynx, the voice box. But instead of going straight there it goes looping past the voice box. In the case of the giraffe, it goes down the full length of the giraffe's neck, loops down one of the main arteries in the chest and then comes straight back up again to the voice box, having gone within a couple of inches of the voice box on its way down. No intelligent designer would ever have done that." "A designer can go back to the drawing board and come back with something more sensible." (Dawkins, 2009)

Richard Dawkins thinks the existence of a designer for the natural world highly improbable but here predicts how such a designer would have acted! The left recurrent laryngeal nerve (LRLN) in the giraffe is just one example of this approach. How should we respond to such attacks?

When we are challenged with arguments refuting design in humans and the animal world and in particular for the existence of an originally good design from the Creator God, first we need to turn the challenge around and ask how such a seemingly useless feature could emerge according to the mechanisms of evolution. The theory of evolution predicts that natural selection will weed out features that are not advantageous. Second, we need to make predictions of possible functions for the feature and follow it up by research. The giraffe is an extreme example, with the longest neck known in the animal world.

In this article, we will look at the biology of the LRLN in mammals. We know most about this nerve in humans, but there is much useful information on other mammals too, including the giraffe. What is the route that this nerve generally takes in the body? What evidence is there for a role for this nerve between its origin from the vagus nerve and its entry into the larynx where its role is well known? What medical or veterinary conditions are associated with damage to this nerve? Once these questions have been considered we can fully assess if the designer needs to "come back with something more sensible".

> "Once these questions have been considered we can fully access if the designer needs to "come back with something more sensible"."

Biology of the Left Recurrent Laryngeal Nerve

The left and right recurrent laryngeal nerves are known for their roles in the larynx (voice box) of mammals, especially in swallowing and voice production **(See Fig 1)**. They control the movement of nearly all the parts of the larynx which are

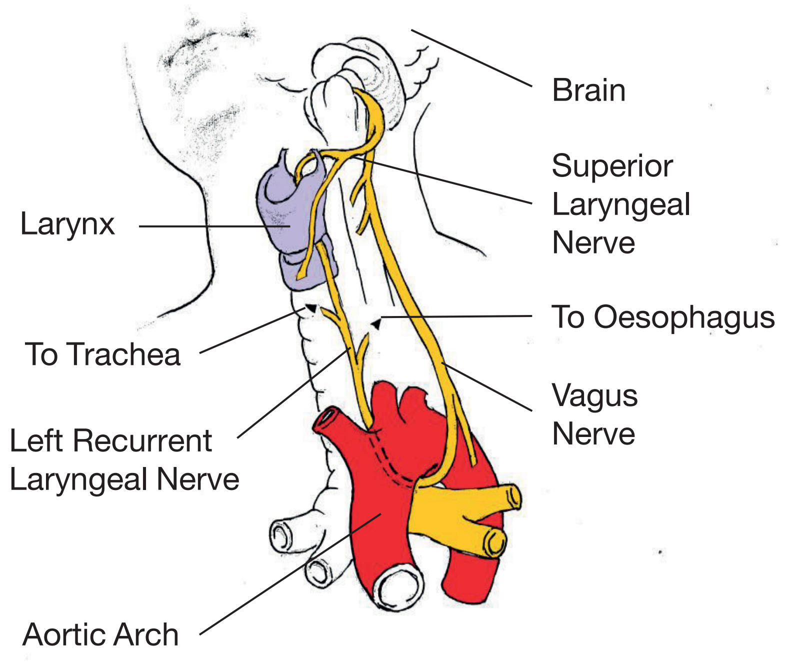


Fig 1. Location of Vagus nerve, left superior laryngeal nerve and recurrent laryngeal nerves in the human neck.
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essential for swallowing and voicing and also supply sensory fibres for the larynx. Also, they contribute to the muscular movement of the valve at the upper end of the oesophagus (Brok *et al*, 1999), very close to the larynx.

Both the right and the left recurrent laryngeal nerve loop down into the chest cavity in all mammals, but the left recurrent laryngeal nerve (LRLN) seems to follow a very circuitous route, irrespective of the length of the neck. It originates from the left vagus nerve (LV) nearby the Aorta (Ao, the large artery leaving the heart) as illustrated here in a dissection of a rat **(Fig 2)**.

The vagus nerve originates in the brainstem near the base of the skull and travels down past the larynx towards the heart. In the diagram you can see that only at the level of the great blood vessels of the heart does the LRLN branch off, rather than directly opposite the larynx. It then loops around the aorta before doubling back up and providing the nerve supply to the larynx on the left hand side. In contrast, the right recurrent laryngeal nerve RRLN loops back up at the higher level of the subclavian artery, just below the larynx.

It would seem much more sensible, on the face of it, if the LRLN branched off from the vagus nerve close to the larynx. The apparent detour into the chest shown in the rat adds a considerable length to the nerve and increases the likelihood of injury.

In the giraffe, the tallest living animal, this is seen in its most extreme form as the left nerve is an additional three to four metres in length. There are two reasons why it seems to be a particularly bad design. Firstly, the risk of injury to this nerve is great because of its proximity to the blood vessels near the heart as it loops around the aortic arch. A number of known conditions in humans cause swelling in this area (e.g. patent ductus arteriosus, pulmonary artery hypertension and aneurysms of the great blood vessels). If the LRLN is compressed by the swelling, the larynx (voice box) is paralysed on the left side. One medical example is Ortner's syndrome, where hoarseness occurs alongside circulation problems (Ortner, 1897 and more recently e.g. Sengupta *et al*, 1998, Mulpuru, 2008). (This paralysis of the larynx shows that the recurrent laryngeal nerves are not simply "backup" for the other nerves that take a more direct route to the larynx, but rather that each nerve supplying the larynx serves a particular function or functions.)

Secondly, the large difference in length means that the nerve impulses may well reach the larynx on the right side rather sooner than on the left where the impulse needs to travel those extra metres down into the chest and back up again. This could mean that the movements on the two sides of the body are not synchronised causing problems for such vital activities as drinking, browsing trees and attacking rivals.

> "Surely, the argument goes, if God designed the giraffe, then he would have avoided these problems by using a direct route from the brain stem to the larynx!"

Can the left recurrent laryngeal nerve be used as evidence for bad design?

Surely, the argument goes, if God designed the giraffe, then he would have avoided these problems by using a direct route from the brain stem to the larynx! In contrast, evolution claims to account for the diversion because fish ancestors with no neck gave rise to mammals with short necks and eventually to the giraffe we know today with the longest known neck. So the LRLN became longer as a consequence of selection for longer necks in the evolving mammal. This excessively long diversion is said to be an example of

> "Imperfections which no designer would ever have perpetrated but which are exactly what you would expect if living creatures were the legacy of history" "Simpler than a major rewiring to a more direct route" (Dawkins 2009).

So far there is no evidence to distinguish between the evolutionist and the creationist viewpoints (Garner, 2010) as we have neither evidence of design nor evidence of advantageous features amenable to natural selection. However, the left recurrent laryngeal nerve may have vital functions between where it branches off from the vagus nerve and enters the larynx. If so, then the creation biologist can point to further evidence of design. Then the evolutionist will airbrush out previous comments about "unintelligent design" and make claims that the circuitous route evolved by mutation and natural selection because of the newly discovered roles of this nerve.

A role for the left recurrent laryngeal nerve before the larynx?

Galen, the early anatomist, gained fame in the second century AD by showing that cutting the LRLN stopped a live pig from squealing! The nerve has remained of great importance in human anatomy and surgery through the centuries (Kaplan *et al.*, 2009). Today, it is of particular significance in thyroid surgery because the thyroid and larynx are next to each other. When removing the thyroid, surgeons take particular care to locate and avoid damage to the left and right recurrent nerves because of the devastating effect it would have on swallowing and talking. There is little comparative information between mammals or evidence for other functions, but enough to challenge evolutionary claims that "no engineer would ever make a mistake like that".

The recurrent laryngeal nerve – a design error?

Does the origin of this nerve near the heart rather than near the larynx cause an unnecessary detour? Many surgeons have reported variations in the pathway of the LRLN because of the need for extreme care to avoid damage to the LRLN during thyroid surgery. Anomalies in the left and right sides show that a more direct route is taken in 0.5–0.6% of cases on the right side (right recurrent laryngeal nerve) but that it is extremely rare on the left side at 0.004% (Defechereux, 2000). There are no examples of humans surviving where the LRLN takes a direct route to the larynx. There is only the rare condition where the organs of the body are found on the opposite side to normal, so the organs expected on the right side of the body are found on the left and the heart is on the right. In this case the LRLN is short and the right nerve is the one that loops around the heart. These strongly indicate that there are vital functions to play along the route and the direct route is not a viable possibility.

Camels and llamas provide a further clue. In these mammals, the left recurrent laryngeal nerve arises from the vagus nerve near the heart as usual in mammals and passes up towards the larynx but does not enter it (Müller, 1962). This again strongly suggests a role for the nerve as it ascends alongside the oesophagus and trachea.

1. Evidence for possible role supporting the great arteries of the heart

In the developing human embryo, the vagus nerve and the LRLN are large in comparison to the aortic arch and blood vessels around the heart. During this time, these two nerves form a sling supporting both the ductus arteriosus, one of the great arteries of the embryonic arch and the aorta. The vagus nerve forms one side of the sling as it comes down from the brain and the LRLN forms the other side as it passes up to the larynx. Unlike the adjacent great arteries which are elastic, the ductus arteriosus is muscular which means that the walls can contract to block up the duct. This happens around the time of birth, changing the pattern of circulation to prevent excessive amounts of blood being direct away from the heart from that time on (Leonard, Hutchins and Moore, 1983). A mechanical role is further suggested by the high proportion of un-myelinated fibres in the LRLN in adults. These cannot conduct nerve signals but do have a structural role, providing support to the aortic arch and the remains of the ductus arteriosus within the chest cavity.

2. Evidence for distribution of nerve fibres en route to the larynx

The LRLN has been traced along its course up the chest in the rat (Dahlqvist, Carlsö and Hellström 2005). Here the number of small fibres is lower at the larynx than near the heart. Here is evidence that some fibres are passing out of the nerve to the oesophagus and the trachea which both lie close by.

3. Dissections show branching of the LRLN below the larynx

Evidence for branching in humans

A number of scientific publications report branching of the LRLN between its origin near the heart and arrival at the larynx. Negus (1943) mentions branches in humans and Sunderland and Swaney (1952) record branches passing to the trachea and oesophagus from their post-mortem dissections. Their drawings indicated a range of between 4 and 13 branches. Liebermann-Meffert *et al.* (1999) found that the nerve passed up the chest cavity close to either the trachea or less frequently the oesophagus. They observed the following;

> "Between the origin and where it entered the larynx, each RLN of the 23 specimens gave off 8 to 14 slack branches … At approximately equal intervals and, without exception, these entered the wall of either the esophagus and the trachea laterally… In the six carefully measured specimens, the left RLN had 2 to 7 branches (mean, 5 branches) and the shorter right RLN actually 5 to 11 branches (mean, 9 branches) to the esophagus; and these alternated with 1 to 5 branches (mean, 3 branches) from

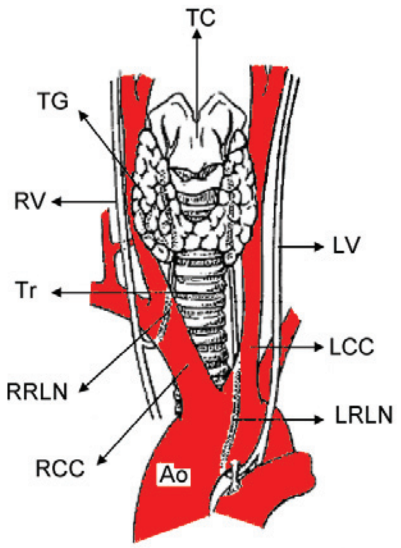


Fig 2. Representative scheme of the RLN in the neck TC = thyroid cartilage, LV= left vagus nerve, LCC = left common carotid artery, LRLN = left recurrent laryngeal nerve, Ao = aortic arch, RCC= right common carotid artery, RRLN= right recurrent laryngeal nerve, Tr = trachea, RV= right vagus nerve, and TG= thyroid gland. Reproduction of part of the diagram by permission from Lima, N. T. M. S., Fazan, V. P. S., Colafemina, J. F. and Barreira, A. A. (2007) Recurrent laryngeal nerve post-natal development in rats. Journal of Neuroscience Methods 165 (1) 18–24. with permission from Elsevier (colour added).

> the left RLN to the trachea, and 3 to 8 branches (mean, 5 branches) from the right RLN."

Another author also noted that both sensory and motor fibres pass from the recurrent laryngeal nerves to the oesophagus and trachea in humans (Monfared, 2001). Illustrations from their paper have been reproduced in **Figs 3 and 4** and clearly show branches en route. In the results section the author notes:

> "As both right and left recurrent laryngeal nerves ascend towards the larynx they give off numerous esophagal and tracheal branches."

Gray's Anatomy (Standring, 2008) also records branches in humans to the cardiac plexus (a network of nerve fibres at the base of the heart), oesophagus and the trachea.

> "Dawkins declared the LRLN was a "remarkable piece of unintelligent design" in a dissection on TV of a giraffe."

> "As the recurrent laryngeal nerve curves around the subclavian artery or the arch of aorta, it gives several cardiac filaments to the deep part of the cardiac plexus. As it ascends in the neck it gives off branches more numerous on the left than on the right side, to the mucous membrane and muscular coat of the oesophagus, branches to the mucous membrane and muscular fibers of the trachea and some filaments to the inferior constrictor."

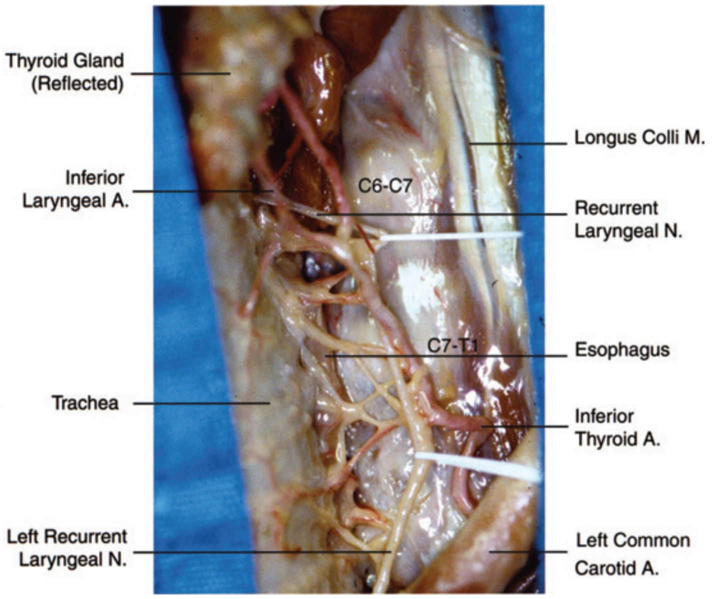


Fig 3. Anterior view of the left RLN and inferior laryngeal artery. The RLN has been retracted from the TE groove to show its tracheal and esophageal branches. Cervical and thoracic vertebral discs are marked for reference. The common carotid artery and internal jugular vein have been retracted laterally. A., artery; N., nerve; M., muscle. [dissection of human neck]

Reprinted from Monfared, A., Kim, D. Jaikumar, S., Gorti, G. and Kam, A. (2001) Microsurgical Anatomy of the Superior and Recurrent Laryngeal Nerves. Neurosurgery 49 (4) 925–933 with permission from Wolters Kluwer Health

Evidence for branching in guinea pigs

Dissections of the guinea pig trachea similarly found that there are several branches from the LRLN to the network of nerves around the trachea during its passage up to the larynx (Bałuk and Gabella, 1989).

> "The majority of parasympathetic and afferent nerve fibres arrive [at the trachea] from the vagus via branches of the recurrent laryngeal nerves."

Evidence for branching in the giraffe

Dawkins declared that the LRLN was a "remarkable piece of unintelligent design" in a dissection on TV of a giraffe. Amazingly, this piece of filming provides direct evidence of branching of the LRLN in the giraffe. Close examination of the recording on You Tube (2009) brought to our attention by Lönnig (2010) clearly shows one branch passing to the oesophagus and trachea between 2.07 and 2.11 minutes into the first section of the *You Tube* recording.

4. Functional evidence for LRLN branches below the larynx

Stimulation of the vagus nerve before the LRLN branches off caused the oesophagus wall to contract in animal experiments (Knight, 1934), but if the same nerve is cut, the whole of the oesophagus is paralysed in the dog and the upper zone in the cat. In cats, Green and Neill (1955), measured electrical discharges from the LRLN during both breathing in and out and concluded that this nerve served pulmonary stretch receptors which provide feedback on inflation or deflation of the lungs.

Is the difference in length evidence for bad design?

The greater length of the nerve on the left compared with the right means it is possible that the nerve impulses do not arrive at the larynx at the same time. If the muscles on the left and on the right were then not contracting at the same time neither voicing nor swallowing would be possible. This has been tested out in dogs (Shin and Rabuzzi, 1971), man and the giraffe (Harrison 1981) and they found that signals arrived simultaneously on the left and right side. The authors found that the left nerve contained a greater percentage of large fast-conducting fibres which compensated for the different length; clear evidence of design.

Summing up

Clearly, there is abundant evidence that the left recurrent laryngeal nerve plays an important role in a variety of mammals along the whole of its length.

Firstly, it provides mechanical support to the great blood vessels around the heart as it loops under the aortic arch and ductus arteriosus.

Secondly it is a source of nerve fibres for the cardiac plexus at the base of the heart.

Thirdly, it provides both motor and sensory branches to the oesophagus and the trachea as it passes upwards to the larynx.

In addition, the longer route taken which serves these functions is counterbalanced by the presence of a greater proportion of large fast conducting fibres in the left nerve compared with the right, allowing the nerve impulses to be synchronised on both sides, clear evidence of design.

The prediction from creation biology is that the nerve plays a similar and possibly more vital role in the giraffe. Not having access to a giraffe, to test this out, I would challenge those who dispute a role for this circuitous route. They should look again at the recording on *You Tube* and see the evidence for branching for themselves and then repeat the dissection of a giraffe carefully checking for the branching already known in other mammals.

The hypothetical designer of Dawkins' mind is said to have made a poor job of the giraffe. This is to make enormous assumptions, whereas a Christian starts from the knowledge of an omnipotent designer revealed in the Bible which provides a framework on which to base his or her interpretation of the natural world. Creation Biology predicts functions for the structures of plants and animals; we can be sure that there was a reason in the original design, but do need to be aware that the Fall and subsequent worldwide Flood in the time of Noah would have had profound effects on all living things. The reasons for the path that the LRLN takes may be purely functional, but, in our mechanistic, materialistic society we can overlook reasons for other designs that are not purely for survival, but contribute to the beauty and variety of our natural world, giving further glory to our Creator. ■

> “The hypothetical designer of Dawkins' mind is said to have made a poor job of the giraffe. This is to make enormous assumptions.”

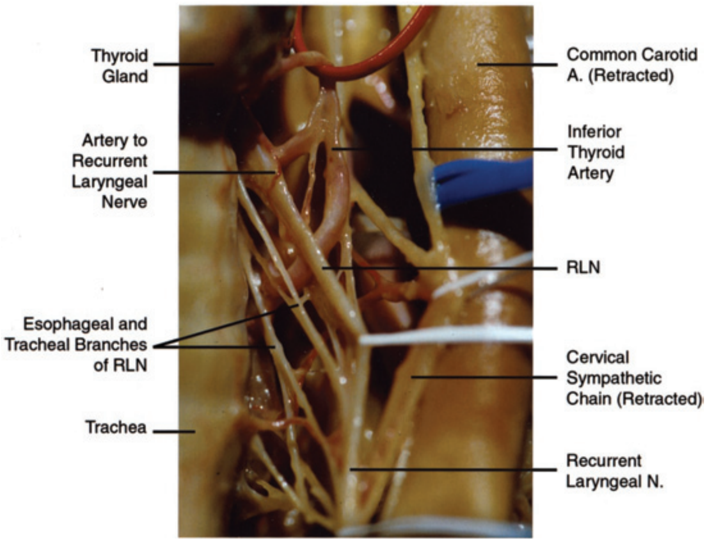

Thyroid Gland
Artery to Recurrent Laryngeal Nerve
Esophageal and Tracheal Branches of RLN
Trachea
Common Carotid A. (Retracted)
Inferior Thyroid Artery
RLN
Cervical Sympathetic Chain (Retracted)
Recurrent Laryngeal N.

Fig 4. Anterior view of the left distal RLN and its arterial supply. The artery to the distal RLN, a branch of the inferior laryngeal artery, is shown. This artery often is visible to the naked eye and marks the location of the RLN in the paratracheal fascia. The RLN is retracted from the TE groove to expose its tracheal and esophageal branches. The ITA is observed interdigitating between the branches of RLN. The common carotid artery and internal jugular vein are retracted laterally. A., artery; N., nerve. [dissection of human neck]

Reprinted from Monfared, A., Kim, D. Jaikumar, S., Gorti, G. and Kam, A. (2001) Microsurgical Anatomy of the Superior and Recurrent Laryngeal Nerves. Neurosurgery 49 (4) 925–933 with permission from Wolters Kluwer Health.

References

Bałuk, P. and Gabella, G (1989) Innervation of the Guinea Pig Trachea: A Quantitative Morphological Study of Intrinsic Neurons and Extrinsic Nerves. *The Journal of Comparative Neurology* 285: 117-132

Brok, H. A. J., Copper, M. P., Stroeve, R. J., Ongerboer de Visser, B. W., Venker-van Haagen, A. J. and Schouwenburg, P. F. (1999) Evidence for Recurrent Laryngeal Nerve Contribution in Motor Innervation of the Human Cricopharyngeal Muscle. *The Laryngoscope* 109: 705-708

Dahlqvist , Å., Carlsöö, B. and Hellström, S. (2005) Fiber components of the recurrent laryngeal nerve of the rat: A study by light and electron microscopy. *The Anatomical Record* 204: (4) 365-370

Dawkins, R. (2009) *YouTube* video of Inside Natures Giants, the Giraffe, a programme first broadcast on BBC in 2009. (Watch frames between 2:07 and 2:11 minutes in section 1 for views of branches of recurrent laryngeal nerve of the giraffe and in particular Dawkins comments in parts 1 and 5) [WWW] http://www.youtube.com/watch?v=0cH2bkZfHw4 accessed on 26 October 2010

Defechereux T, Albert V, Alexandre J, Bonnet P, Hamoir E, Meurisse M. (2000) The inferior non recurrent laryngeal nerve: a major surgical risk during thyroidectomy. *Acta Chir. Belg.* 100(2):62-7.

Garner, P. (2010). Musings on loopy laryngeal nerves. [WWW] http://thenewcreationism.wordpress.com/2010/01/ Accesssed on 26 October 2010

Defechereux T., Albert V., Alexandre J., Bonnet P., Hamoir E., Meurisse M. (2000). The inferior non recurrent laryngeal nerve: a major surgical risk during thyroidectomy. *Acta Chir Belg.* 100(2):62-7.

Garner, P. (2010). Musings on loopy laryngeal nerves. [WWW] http://thenewcreationism.wordpress.com/2010/01/ (Accessed on 26 October 2011)

Green J. H. and Neill E. (1955). The Respiratory Function Of the Laryngeal Muscles. *J Physiol* 129:134-141.

Harrison, D. F. N. (1981). Fibre size frequency in the recurrent laryngeal nerves of man and giraffe. *Acta Otolaryngol.* 91:383-389.

Kaplan, E. L., Salti, G. I., Roncella, M., Fulton, N. and Kadowaki M. (2009). History of the Recurrent Layngeal nerve: From Galen to Lahey. *World Journal of Surgery* 33:386-393.

Knight, G. C. (1934). The relation of the extrinsic nerves to the functional activity of the esophagus. *Brit. J. Surg.,* 22:155-168.

Leonard, M. E., Hutchins, G. M. and Moore G. W. (1983). Role of the Vagus Nerve and Its Recurrent Laryngeal Branch in the Development of the Human Ductus Arteriosus. *The American Journal Of Anatomy* 167:313-327.

Liebermann-Meffert, D.M.I., Walbrun, B., Hiebert, C.A. and Rüdiger Siewert, J. (1999). Recurrent and superior laryngeal nerves: a new look with implications for the esophageal surgeon. *Ann. Thorac. Surg.* 67:217-223.

Lima, N. T. M. S., Fazan, V. P. S., Colafemina, J. F. and Barreira, A. A. (2007). Recurrent laryngeal nerve post-natal development in rats. *Journal of Neuroscience Methods* 165(1):18–24.

Lönnig, W.E. (2010). *The Evolution of the Long-Necked Giraffe (Giraffa camelopardalis L.) –What Do We Really Know? Parts one and two* [WWW] http://www.weloennig.de/Giraffe.pdf (Accessed on 26 October 2010)

Monfared, A., Kim, D., Jaikumar, S., Gorti, G. and Kam, A. (2001). Microsurgical Anatomy of the Superior and Recurrent Laryngeal Nerves. *Neurosurgery* 49(4):925–933.

Mulpuru, S.K., Vasavada, B.C., Punukollu, G.P. and Patel, A.G. (2008). Cardiovocal Syndrome: A Systematic Review. *Heart, Lung and Circulation* 2008(17):1–4.

Müller, H. J. (1962). Beobachtungen an Nerven und Muskeln des Halses der Tylopden. *Zeitschrift für Anatomie und Entwicklungsgeschichte* 123:155-173.

Negus V.E. (1943). The mechanism of swallowing (under Laryngology). *Proc. Royal Soc. Medicine.* 36:85-92.

Ortner, N. (1897). Recurrenslahmung bei Mitralstenose. *Wiener Klinische Wochenschrift* 10:753-755.

Sengupta, A., Dubey, S. P., Chaudhuri, D., Sinha, A. K. and Chakravarti, P. (1998). Ortner's syndrome revisited. *The Journal of Laryngology and Otology* 112:377-379.

Shin, T. and Rabuzzi, D. D. (1971). Conduction studies of the canine recurrent laryngeal nerve. *Laryngoscope* 81:586-596.

Standring S. (ed.) (2008). *Gray's Anatomy: The Anatomical Basis of Clinical Practice.* 40th edition. Elsevier: Amsterdam. pp. 459, 588-589.

Sunderland, S. and Swaney, W.E. (1952). The intraneural topography of the recurrent laryngeal nerve in man. *Anat. Record* 114:411-426.

"the word": your correspondence

Dear Editor(s),

Although reluctant to criticise Steve Lloyd's "Debating Darwin" (Origins 54) because nearly everything in it provides me with invaluable help with my current attempts to challenge theisitic evolutionists, I suggest that there is at least one of the latter lacking – "theological and scientific rigour". I refer to Dr. Denis Alexander, whose theology and alleged scientific evidence that we once shared a common ancestor with the apes are exposed as suspect and fallacious in eight of the eleven sections of "Should Christians Embrace Evolution?" (ed. Norman C. Nevin, I.V.P. 2009).

With regard to "academic honours", three of the authors of those sections mentioned above hold master's degrees in both maths or science and theology, the most notable being Geoff Barnard, Ph.D., MA(Theo), MIBiol, CBiol, qualifications which one would imagine are at least equal to those held by any leading theistic evolutionists! ■

Yours Faithfully,
Frank Peachey, MRSC.

PS: Re. "academic honours", I feel bound to mention our esteemed BCS President, Emeritus Prof. E. H. Andrews, BSc., PhD., DSc., F Inst P., FIM, CEng., CPhys. (and creationist!), although he was not a contributor to the above mentioned book.

Reply from Stephen Lloyd

I am grateful for Mr Peachey's careful reading of my article and the opportunity to clarify some possible areas of misunderstanding.

Firstly, although I did not address the issue in the article directly I hope it is clear that I also find Dr Alexander's understanding of Adam seriously flawed both theologically and scientifically. (For details see my contribution to the book 'Debating Darwin'). Describing an argument as 'rigorous' does not mean it is correct or even convincing. My reference to the 'theological and scientific rigour of theistic evolutionists' was to highlight that they make careful arguments that engage scientific and biblical data and they attempt to address objections to their position. Their scientific arguments cannot be quickly set aside as showing an ignorance of genetics or geology. Where theistic evolution falls short is being too selective in the scientific evidence considered and in not giving due consideration to alternative interpretations of the same data. Theologically, whilst they are ingenious in their appeal to scripture, their argument fails for the reasons I describe in the article. My point is simply that theistic evolutionist arguments and assumptions need to be carefully understood and unpicked rather than dismissed as having no merit.

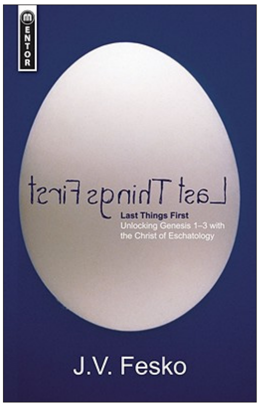
Secondly, my incidental reference to academic honours needs some explanation. When it comes to academic honours sometimes 'less is more.' For example, anyone who can write FRS (Fellow of the Royal Society) after their name has no need to list degrees or membership of other professional societies – FRS has a lot more kudos. I don't know of any current creationist FRS, but within the advisory board of the Faraday Institute, a leading theistic evolutionist organisation, 6 out of 15 are FRS (and the board includes some non-scientists). I fully understand this comparison may not be entirely fair: merely being a FRS does not make your argument correct, some creationists may be better scientists than some who are a FRS, and maybe no openly creationist scientist would be elected as a FRS today. But the comparison does illustrate the battle we are up against in terms of how creationists are *perceived,* within the evangelical church as much as in the wider world. A church member who is not particularly well informed may well conclude that theistic evolution is the right position to take on the basis of the scientific eminence of its leading proponents. Again the lesson for us as creationists is not to underestimate the opposition. ■

Book Review

Last Things First: Unlocking Genesis 1-3 with the Christ of Eschatology

Dr J. V. Fesko
Christian Focus Publications, 2007. 222 pp.
ISBN 978-1845502294 **£11.99**

Reviewed by Ray Trainer



Overall this is an excellent book. The subtitle of the book, 'Unlocking Genesis 1-3 with the Christ of Eschatology', reveals that the book is not so much about the mechanics of creation, but about the *theological* purpose and teaching of Genesis 1 to 3. Effectively, Fesko's thesis is that Genesis 1 to 3 is primarily not about science, or even about history, but about theology. In particular, these first three chapters of the Bible recount for us the failed work of the first Adam and they point us forward to Jesus Christ, the last Adam. With some reservations, which I will discuss later, Fesko's thesis is correct. Genesis 1 to 3 is part of the Bible, God's word. The Bible is not a science textbook, nor a history lesson. It's God's revealed truth to men and women. As such, the Bible needs first and foremost to be understood *theologically.* Too much emphasis upon the science and history underlying Genesis will lead to an imbalanced exegesis and to significant theological truth being overlooked.

Fesko's approach is through using the techniques of biblical theology (that is, by considering theological motifs in the light of God's unfolding of salvation history with respect to its Scriptural timeline and organisation), rather than through the older methods of systematic theology. In addition, Fesko's understanding of Scripture resides within the framework of classical covenant theology.

There are six substantive chapters, each dealing with different aspects of theological truth as revealed within the early chapters of Genesis. There is also a short, seventh chapter acting as a summary of the arguments within the book. Chapter 1 – on "Man in the Image of God" – is insightful. Whereas Adam only *bears* the image of God, Jesus *is* the image of God. Through the fall of Adam the image of God is marred, but not destroyed. Through the life and death of Jesus, the last Adam, the image of God will be restored in us (Romans 8:29, 1 Corinthians 15:48f).

Chapter 2 is more speculative, though Fesko's arguments are indeed compelling. Fesko contends that the Garden of Eden is a temple and Adam's work is more as a priest than as a farmer. As already stated, and Fesko would readily concur, the evidence for this understanding of the Garden of Eden is somewhat tentative, but the cumulative impact of all the evidence (I counted ten different arguments in all) is strong.

Chapter 3 is the least helpful chapter within the book. In this chapter Fesko restates the standard arguments for a "covenant of works" understanding of God's relationship with Adam prior to the fall. Though there is much to commend this view, I am yet to be fully convinced by the arguments brought to bear in its favour. Disappointingly, Fesko does not interact in any depth with current debates on this subject. For more weighty discussion covering the whole arena of God's covenants I would suggest reading one or more of the following: *The God of the Covenant* edited by Jamie Grant and Alistair Wilson, *Sealed with an Oath* by Paul Williamson, and *God of Promise* by Michael Horton.

Chapter 4 – on "Shadows and Types of the Second Adam" – is an important chapter. This chapter explores further the motif of covenant. It relates the so-called "covenant of works" by God with pre-fall Adam to God's covenants with Noah, Abraham, Israel through Moses, and David (though, surprisingly, not to the new covenant of Jeremiah 31:31-34). The continuity between the covenants is emphasised, but any discontinuity is somewhat minimised. In contrast, I confess to having a strong sympathy for the Mosaic covenant being regarded as "parenthetical" to the sweep of gracious covenants. Within the New Testament it is this covenant which is considered obsolete (Hebrews 8:13). However, with this difference in mind, I still found the chapter helpful, laying as it does important groundwork for the next chapter. To quote Dr Fesko (page 142): "The covenants all in some way hearken back to the creation and the work of the first Adam but ultimately serve as shadows and types of the second Adam."

Chapter 5 is the highlight of the book. This chapter deals with how and why Jesus is the last Adam. Fesko brings out the many similarities between Adam and Jesus. However, more crucially, Fesko also shows how Adam – as God's prophet, priest and king – fails to fulfil God's mandate for him, but in contrast Jesus – through his life, death and resurrection – succeeds. This is worked out in heart-warming detail. Particularly insightful is to see how the dominion mandate of Genesis 1:28 is still in effect and is fulfilled by the last Adam and through his church (Hebrews 2:4-9, Matthew 28:18-20)!

The final substantive chapter considers the Sabbath. Here the eschatology promised in the subtitle of the book comes to the fore. There is an eschatological goal to Adam's work. This is represented in the tree of life. However, the specific relationship between this tree of life and eschatological rest (as typified by the Sabbath principle running throughout the entire Bible) is unknown. Even so, Fesko does argue that the Lord's Day is the New Testament Sabbath and that the Lord's Day is on the first day of the week because the last Adam's work, unlike the first Adam's, has been accomplished and the new creation begun.

As can be seen, this book does not truly concern itself with creationism. In fact, it does not intend to. The author's primary aim is to consider the theological implications of Genesis 1 to 3 as they relate to salvation history. However, Fesko's stance on this does raise some vital issues. Let me mention three. First, Fesko argues that because Genesis is primarily theological it has little or nothing to say on the creation/evolution debate. Let me quote Dr Fesko (page 202): "Protology *[the doctrine of first things]* is not about science; it is ultimately about the second Adam. Genesis 1-3 is no more about science than is Paul's epistle to the Romans." However, to compare Genesis with Romans in this way is wrong. Though not a history textbook, Genesis is still history. In this sense Genesis is more comparable with 1 and 2 Samuel or with John's Gospel. These also are primarily theological in purpose. Consider for example the seven signs of John's Gospel. However, the stories found within them are still true! Even with Paul's letter to the Romans, though we don't turn to it to find out the names of people living within the Roman empire during the first century (that's not its purpose), nevertheless that's what we find and those names are reliable!

Second, Fesko seems to imply that, generally speaking, creationists are also dispensational in outlook. In other words, it's the strict literalism of dispensationalism that results in a creationist understanding of Genesis. Creation science is only the dispensational interpretation of creation! Now, that division may be true within the US (though I don't think it is), but it is certainly not true within the UK. I, for one, am reformed and amillennial in my understanding of Scripture, and my young-earth-creationism stems from that theological worldview.

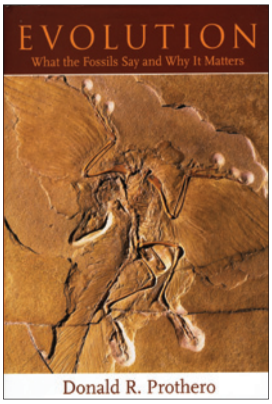
Third, I agree with Dr Fesko when he states (page 201): "Genesis 1-3 was not intended to be read as a document detailing the scientific origins of the cosmos. The reason for Genesis 1-3 was not to refute Charles Darwin and scientific evolutionary theory. On the contrary, it was intended to show the work of the first Adam, which is foundational to comprehending properly the work of the second Adam." However, it's the actual *theological* implications of Darwinianism that lead me also to reject it as incompatible with Genesis 1 to 3. Independent to the Bible, science is casting serious doubt on the theory of evolution. More importantly, biblical truth itself concerning the physical descent of *all* people from Adam (Romans 5:12-21, 1 Corinthians 15:21f, 45-49, Luke 3:38), suffering and death *before* the fall (Genesis 1:31, Romans 8:19-23), and a global flood (2 Peter 3:3-10) cannot be shoehorned – as some notable theistic evolutionists have found – into the Darwinian model for origins. So, yes, I agree with Dr Fesko (page 23): "Some recent explanations of Genesis 1-3 are wanting simply because they focus too much of their exegetical energy on the one issue of the length of days." Nevertheless, it is exegetical energy *rightly* spent on the meaning and implication of Romans 8:19-23 and 2 Peter 3:3-10 that leads one *necessarily* to reject Darwinianism. ■

> "As you can see, this book does not truly concern itself with creationism. In fact, it does not intend to."

Book Review
Evolution: What the Fossils Say and Why It Matters

Donald R. Prothero
Columbia University Press, 2007. 381 pp.
ISBN 978-0231139625 **£20.50**

Reviewed by Marc Surtees



Donald Prothero is a man with a mission. In this book he gathers together all the evidence which he believes proves that evolution is a fact and that creationists are wrong.

The book is in two parts. The first deals with the nature of science, science and creationism, the fossil record, the evolution of evolution, systematics and evolution. This part includes a number of direct attacks on American creationists and intelligent design theorists (see chapters 2 and 3), but there are several simple mistakes which show that Prothero has not always properly researched the arguments. For example he states that *baramin* is a Hebrew word (p.74); it was in fact a neologism derived from two Hebrew words meaning 'created kind'. He also suggests on a number of occasions that unless we have actually done a significant amount of research on the fossils we should stop arguing and simply accept the overwhelming evidence for evolution. The second part starts with the origin of life and takes us all the way to the evolution of man and concludes with a chapter that is best described as a sermon on why it matters.

This book is extremely useful in that it gathers together the best evidence for evolution and allows us to examine this evidence, and for that reason all Bible believing scientists should read it. Occasionally we find examples of weaknesses in some creationist arguments that should be addressed. However, the book fails in its aim because the case that Prothero presents is actually very weak when it comes to the big picture of microbes-to-man evolution. Prothero is, on a number of occasions, forced to take massive leaps of faith because the evidence is missing, and there are a number of times when he overstates the case and even some occasions where he invents missing evidence to make his case appear stronger.

Surprisingly we find a copy of Haeckel's drawings of embryos (p.110) and the statement that although Haeckel may have been over-enthusiastic with his diagrams he was essentially right. Prothero completely overlooks work published by Richardson *et al* (1997) which demonstrates that the embryological differences are much more significant. Then, as if to clinch the argument and close down any remaining opposition, Prothero provides us with a picture of a human embryo at five weeks (p.111) and states that, "You still had many fish-like structures, such as a well-developed tail and the embryological precursors of gill slits," which is simply not true.

In the chapter on systematics and evolution Prothero gives a useful overview of cladistics and defines a cladogram as "a branching diagram of relationships between three or more taxa". He then goes on to explain that: "nodes are simply branching points supported by shared derived characters, which presumably represent the most recent hypothetical common ancestor" (p.133). And: "cladograms never put real taxa at any nodes, but only at the tips of the branches" (p.134). What this means is that cladistics can never identify ancestors. Later he helpfully explains what he means

Trilobite. © Pablo Caridad, www.istockphoto.com

by the terms 'ancestor' and 'transitional' with regard to fossils. An ancestor is used for "a fossil that has all the right anatomy and is older in time to potentially be ancestral to some later form." But, "telling whether a particular fossil is actually the ancestor of another is not a testable hypothesis. Instead, we look to fossils to show us the *transitional anatomical features* of ancestors that illustrate the path that evolution took" (p.135). Prothero then goes on to remind his readers that this is not a problem for an evolutionist because they know the ancestors existed, and it is dishonest for a creationist to claim that the ancestors are missing. This rather makes one wonder if he is right to insist that the strongest part of the evidence for evolution today is the fossil record. He also insists that we have to understand that "evolution is a bush not a ladder" (p.125) as if that resolves all the problems with the fossil record. It does not explain why we only ever see the twigs and tips and almost never the hypothetical common ancestor. Prothero does claim that the ancestors are sometimes known and cites the case of planktonic microfossils (p.134). This is a litany that he repeats quite often (see pp.221, 263, 280), as if that will somehow prove that evolution is true, whereas creationist biologists are perfectly aware of the bushiness of the fossil record and find this supports a biblical view of biology.

Part two starts with an overview of "life's origins" and here we find some misleading statements that simply cannot be justified on the basis of the evidence. Prothero claims that Miller was able to produce "molecules of biological relevance and complexity", which is strictly speaking true, as he was able to produce amino acids. He goes on to state that, "Even though amino acids are much more complex than the chemicals he started with, Miller showed they were remarkably easy to produce." This ignores the fact that the next steps to functional proteins do not occur spontaneously and are much more difficult, yet Prothero states repeatedly that it is very easy to get biologically complex molecules. He leaves the reader with the impression that life gets started because the simple building blocks "link up" and form functionally useful polymers, which is not true. On page 150, Prothero claims that, "In the 1950s Sidney Fox showed that splashing amino acids on hot dry volcanic rocks produced most of the proteins found in life instantly." Unfortunately, no references are given so it is difficult to check this. However, a literature search yields a couple of papers by Sidney Fox and co-workers. Heating six amino acids in a test tube under nitrogen, resulted in small peptides, some of which bound to hormone receptor proteins (Fox and Wang, 1968), which is unsurprising as many compounds do the same[1]. A few pages later we have another outrageous claim that, "All it would take is a few zeolites in a primordial soup, and the amino acids could be lined up into much more complex proteins." Here we do not even get a name to help us try to find the original research that shows this. We have to take Prothero at his word. And so it goes on, the whole chapter on the origin of life is full of similar assertions, until we arrive at the end, where we read that, "In most cases, each step can either be simulated in the lab or seen in examples of the process" (p.158). This statement is seriously misleading.

Finally, in chapter seven, we come to the details of the fossil evidence starting with the Cambrian explosion. Prothero tries to prove that there was no Cambrian explosion (his term is "slow fuse"). His case stands or falls on whether or not he can show that there are earlier fossils that could have given rise to the Cambrian creatures. Prothero tries to suggest that the Ediacaran fauna are possible ancestors, but the only problem with this argument is that they are completely different and none of the experts on the Ediacarans believe these creatures to be the ancestors of Cambrian creatures. But by making light of the differences and stating that they are intermediates between single-celled organisms and the more complex and varied Cambrian creatures, Prothero tries to persuade us that the Cambrian explosion is a creationist illusion. Here he uses terms likely to confuse by suggesting a link between the "small shelly" organisms and "large shelly" organisms like the trilobite. The problem with this is that trilobites were not shelly creatures, they had exoskeletons like those of arthropods. As a result, the attempt to defuse the Cambrian explosion fails!

The book continues the review of the evidence of evolution by looking at the invertebrate fossils before bringing in the vertebrate fossils from fish to human. Here we find some examples of nice transitions in shell morphology, which are not going to convince anyone either way. This is followed by discussion of the various transitional forms that supposedly link worms to "shell-less" worm-like molluscs, segmented molluscs and unsegmented molluscs. These forms (some of which are living today) are regarded as transitional because they have a mixture of features or a mosaic of characters. The best example is perhaps the velvet worm, with its segmented worm-like body and, according to Prothero, "jointed" limbs like an insect. But again the details of how exactly these creatures demonstrate the evolution of worms to insects is unclear, and the story starts to fall apart when examined closely because we find that velvet worms do *not* have jointed limbs and the "segmented" mollusc *Neopilina* is not considered to be truly segmented.

The chapter on fish is rather unconvincing, especially when we are simply told that jaws "appeared". The fossil evidence is conspicuous by its absence. This lack of evidence illustrates one of the major gaps in the evidence for evolution: there is no evolutionary explanation for the appearance of jawed creatures in the fossil record. But Prothero is undisturbed by this massive problem for the evolutionary scenario and moves quickly on to the transition to land. On the way we are treated to more dubious claims and choice rhetoric. There are claims that the fins of amphibious fish like mud skippers are "jury-rigged" and "suboptimal" without any evidence to show that this is the case. This affords yet another occasion for a side-swipe at intelligent design theorists. It is curious how evolution is supposed to be about the survival of the fittest and yet there are all these creatures with "jury-rigged" and "suboptimal" features that are only just good enough. Evolution is a very flexible theory that seems able to explain everything. Once again there are dubious claims, for example in the discussion of the evolution of the tetrapod limb we are told that *Panderichthys* had remarkably "foot-like lobed pectoral and pelvic fins". The claim that the pelvic (hind) fin of *Panderichthys* is foot-like is demonstrably false, while the case could be made that the pectoral (front) fin is more fin-like than foot-like.

The evolution of life adapted to land is presented as having occurred but the evidence is again not readily apparent. However, the lack of evidence does not stop Prothero making unsubstantiated claims like, "Internal fertilization evolved more than once of course" (p.234). The evolution of life on land is supposed to be another good example of evolutionary transition, yet when we examine the examples provided (pp.235-234), we have only a confusion of "primitive" and "advanced" features that appear to come and go at random. Then there is the amazing transition of land reptiles to marine reptiles. The fossils presented as evidence for this transition are again not convincing, but rather show a variety of marine creatures with reptilian features (p.240). This is just one of five examples of the supposed evolution of land creatures to sea creatures. Even though Prothero admits that it is amazing to believe that five different types of creature made the transition from land to sea, this just shows us the power of natural selection.

In the chapter on dinosaurs, Prothero goes to great lengths to discredit Gish by bringing forward evidence that is supposed to fill in all the gaps in dinosaur evolution. Yet in doing so he fails to address some key problems associated with dinosaur origins. We are told, for instance, that it is wrong to reject the evolutionary account of the horned dinosaurs, as there are many examples of similar dinosaurs that lack the frills and horns typical of well known creatures like *Triceratops*. A more likely interpretation is that these "transitional" forms merely show different varieties of ceratopsian dinosaurs (the created group to which *Triceratops* belongs). Then we are told that the controversy over the evolution of birds from dinosaurs was quickly resolved, yet it appears from the main protagonists that it is still ongoing. However, as Prothero points out in his discussion of *Archaeopteryx* (pp.260-264), it is fair to say that some creationists have created problems for themselves by rigidly defining the criteria for determining whether a creature is a bird or a dinosaur. I actually agree with Prothero on this point, as there is good evidence for dinosaurs with feathers that are indistinguishable from bird feathers, and *Archaeopteryx* more readily falls into this group. This illustrates the point that most of the transitional fossils that Prothero presents throughout the book are either cases of variety within limits or mosaic creatures possessing a mix of features typical of more than one group. The missing evidence (the so called dino-bird fossils from China notwithstanding) is that which shows a transition from a scaly reptile to a feathered creature with evidence of gradual transition from a full suite of reptilian features to a full suite of bird features. What we have in the fossil record are weird mosaics showing a mixture of characters. *Archaeopteryx* is a good example, with some characters that are clearly reptilian, for example the skull and the tail, and other characters that are fully bird-like, for example feathers. [Editor:

Ancient Sea Turtle. © Michael Brake, www.istockphoto.com the skull of *Archaeopteryx* is reptile-like in some ways, e.g. possession of teeth, but in other ways, e.g. structure of braincase and inner ear, is very bird-like.] Living mosaics include the platypus and the red raccoon, neither of which can be considered transitional in an evolutionary sense.

Next, Prothero treats us to a tour of the fossils that are said to demonstrate the evolution of mammals. But before he does so, he pours scorn on anyone who uses the term "mammal-like reptiles" to describe the synapsids. This is a shot across the bows of creationists who, if they use such a term (which was universally accepted by evolutionists until very recently), are obviously ignorant and out of date (p.217). We are shown many examples of fossil series that creationists would interpret as variation within a kind (a basic type or baramin). For instance, the dog, cat, elephant, horse, rhino and camel fossils that creationist biologists would interpret as evidence of post-Flood diversification. There is no convincing evidence that these creatures descended from a common ancestor, although Prothero attempts to persuade us that they all descended from a synapsid ancestor. We are shown representative fossils that are supposed to demonstrate the gradual evolution from pelycosaurs to therapsids to cynodonts to mammals. However, there is a significant discontinuity between these groups, which is not so obvious when only the skulls are shown. There is a lot of discussion of the jaws and ears as this is an important change from the synapsid middle ear with only one bone (the stapes) to the mammalian middle ear with three bones (the incus, mallus and stapes). There is a lot of detail that rather obscures the fact that the obvious gradual transition would be from one to two to three middle ear bones. There are no creatures with two middle ear bones which the evolutionist ought to expect. The evidence that we are presented with consists of a reduction in size of the bones that make up the synapsid jaw joint, a dubious claim that the bones are in contact with the stapes and that sound is transmitted through the jaw bone. Here, Prothero's argument becomes a little confusing, because his supporting evidence is the fact that snakes hear through their jaws which often rest on the ground (p.279). However, snakes are not synapsids and, furthermore, the synapsids walked around on four legs so their jaws would only be on the ground when resting. Thus, it is very unlikely that synapsids had a similar sound transmission system. The clinching piece of evidence (p.279) is said to be that, when we were embryos, our ear bones were cartilages in the lower jaw and skull; but this is pure fiction. He then goes on to claim that the recently discovered fossil of *Yanoconodon* shows the ear bones attached to the jaw (p.279), even referring us to a colour plate of the fossil. Unfortunately, he does not produce other photos of the jaw and supposed ear bones which show that they are separate from the jaw; they are only connected in the diagrammatic reconstruction of the jaw and ear.

Then we are presented with the evolution of the whale (p.318), with a diagram (p.319) of highly stylised transitional forms that is misleading. In this diagram we are shown a hippo as the closest sister group. However, in the text we are told that *Pakicetus* is intermediate between mesonychids (carnivorous hoofed creatures) and fossil whales, and also that *Pakicetus* is related to the artiodactyla (a group which includes hippos and pigs but is completely unlike the mesonychids). Furthermore, *Basilosaurus* does not belong in the series as it is not transitional (even by the definition provided in this book). At best *Dorudon* might possibly be an ancestor of toothed whales, but we are not told how these creatures evolved the highly sophisticated adaptations such as the sonar system and the ability to suckle their young underwater. The origin of the baleen whales is also unexplained. Instead, Prothero states that the final clinching proof is that modern whales have vestigial leg bones embedded in their abdominal muscles. Unfortunately he fails to point out that the musculature and connecting nerves, and the fact that these bones are part of the reproductive system, disqualifies them from being vestigial leg bones. The final statement of this section about all the fossil and molecular evidence also glosses over the fact that these pieces of evidence do not give a consistent picture.

By the time we get to the chapter on human evolution Prothero believes that his case is proven beyond doubt, but again he overstates his position in his attempt to prove that humans are "just another ape". Part of his attack is to criticise some poor creationist arguments rather than engage with the best and most up-to-date creationist critiques of the evidence for human evolution. Once again he trots out the argument that evolution is bushy (p.336), in this case "very bushy", therefore we are unable to trace ancestor-descendant relationships. However, we are told that is not important because the "amazing quality of the hominid fossil record is an objective fact". That "fact" notwithstanding, there is no convincing story of how we are supposed to have evolved. We have a varied collection of fossil apes, some of which probably walked upright, but there is a huge gap between these fossils and the fossils of genus *Homo.* The quality of these fossils allows us to better define the extent and limits of variation and consistently show the uniqueness of humans. Supporting evidence is marshalled from DNA studies and observations of human "tails". The most astonishing thing is the fact that Prothero cites the evidence from DNA hybridisation studies published in 1984 and claims that the temperature of separation is directly proportional to the number of genes in common. This is not the case, yet we are told that the chimp and human DNA has been proven to be 97.6% identical. For some reason Prothero ignores all the DNA sequence data that was available when he wrote his book. He also assumes that the 97.6% of the DNA that is the same are the "structural genes" which is inconsistent with the fact that the genes only make up a small percentage of mammalian DNA. Prothero also tries to use the existence of pseudotails as proof that humans have the genes for tails. However, he does not call them pseudotails. He presents three pictures as if they all come from the same paper (p.345) and suggests that this proves that we have the genes for tails. Reference to the original paper (Bar-Maor *et al,* 1980) shows that Prothero has put a gloss on the findings to support his claims. The paper reports an observation of a deformed unfused coccyx, which is not a tail, and furthermore the article does not include the two pictures of what are soft boneless tissue protuberances in two subjects both with a normal coccyx.

The last chapter of the book ('Why does it matter?') is arguably the worst. For example, we are told that there "are a significant number of extreme creationists (including an entire Flat Earth Society) who believe that the Bible teaches that the earth is flat and that all those NASA photos of the earth from space are hoaxes." Much of this chapter deals with the peculiarities of the situation in the USA and the various attempts to get equal time for creationism in the classroom, which are not so relevant to Europe. Prothero also seems to blame creationism for most of the problems of American scientific under-achievement! There is even an attack on ex-president Bush and the "oil industry flunkies", and the outlandish assertion that creationism is bad for your health (p.356) because it stops medical advances.

In conclusion, this would have been a much better book if Prothero had spent less time preaching and more on careful analysis of the evidence and what that evidence actually shows. On the positive side there is much useful evidence for the potential of great diversification within the created kinds. There are many interesting examples where the evidence for evolution is weak, especially when looking at the origin of life and the origin of new body plans. It also highlights a few cases where we as creationists have gone wrong and need to handle the evidence more carefully. All creationist biologists should read this book because it gives a great overview of the evidence and will prepare the reader for continuing the debate. ■

> "All creationist biologists should read this book because it gives a great overview …

Lybris Polyterus. © Auke Holwerda, www.istockphoto.com

References

Bar-Maor, J.A., Kesner, K.M. and Kafotori, J.K. (1980). Human tails. *Journal of Bone and Joint Surgery,* 62B:508-510.

Fox, S.W. and Wang, C.T. (1968). Melanocyte-stimulating hormone: activity in thermal polymers of alpha-amino acids. *Science,* 160:547-548.

Richardson, M.K., Hanken, J., Gooneratne, M. J., Pieau, C., Raynaud, A., Selwood, L. and Wright, G.M. (1997). There is no highly conserved embryonic stage in the vertebrates: implications for current theories of evolution and development. *Anatomy and Embryology,* 196: 91-106.

Footnote

[1] For a detailed critique of Fox's 'Thermal model' by Dr. Duane Gish, see: http://www.icr.org/index.php?module=articles&action=view&ID=79 [Accessed on 22nd March 2010]

Book Review
Evolution: Good Science?

Dominic Statham
Day One Publications, 2009. 160 pp.
ISBN 978-1846251702 **£7.00**

Reviewed by J H John Peet

Dominic's desire in writing this book was to produce a readable but accurate assessment of evolutionary theory and the creation alternative. His vision is to enable the work to be translated into other languages in order to fight the evolutionary ideology. He has certainly been successful in producing a good and helpful book.

When Dominic started out on this project, he approached the BCS committee for help and advice. He was pointed to various experts in the different fields he wanted to cover to ensure that he was up-to-date in his comments and scientifically accurate. This has resulted in a very good book that can be readily passed on to others.

He begins the book by describing the nature of evolutionary theory (both Darwinism and neo-darwinism) and then reviewing the evidence put forward in its support. To this end, he looks at the fossil record. He notes the lack of reliable evidence for transitional forms and the evidence of rapid sedimentation and fossilisation. He shows that the evidence is consistent with the biblical Flood model, though he wisely does not propagate any single view. He also briefly discusses the recent RATE research into radiometric dating. It would be useful to have a fuller detail on the reference 45 on page 68 in the next edition.

A sequence of shorter but valuable chapters follow looking at processes of species adaptation, homology, embryology and biogeography. In this reviewer's opinion, this is some of the most useful material in the book compared with other creationist books. In the chapter on embryology, Dominic refers to flightless birds and rightly points out that they might have lost the ability to fly due to mutation (page 82). However, I would have liked at least a comment on the ostrich in Job 39:13-18 which suggests that God also created some birds that way. The one typographical error I noticed occurs on page 86 in the spelling of "biogenetic".

The next couple of chapters cover genetic evidence and design. Again good material.

The sub-title of the book is "Exposing the ideological nature of Darwin's theory". That is the theme of the closing chapters and includes a short assessment of the problems of the theistic evolutionary position.

Overall a good work by Dominic and I commend it. ■

BCM News

We are pleased to announce that Paul Garner, a member of our committee and also of our sister organization BCM, has been successful in obtaining a place to undertake study towards a master's degree in the academic year 2012-2013. He will be beginning a one-year, full-time course in late September.

Planning a meeting in 2012-2013?

While studying, Paul will be unable to undertake his usual schedule of engagements. Of course Dr Steve Lloyd will continue to be available for speaking opportunities and we also hope that at least one visit by an overseas speaker may be arranged. In addition we are pleased to say that four associate speakers have agreed to help us with engagements while Paul is away. Each is willing to accept a couple of meetings during the academic year 2012-2013. Details of the speakers and topics they can offer are as follows:

Dr David Tyler (Manchester)

Science and faith: why are there tensions? / Biblical creation: does it matter what we believe? / Design in nature: can it be handled by science? / Geology and the Flood / Understanding the rock record.

Dr Sylvia Baker (Manchester)

Creationism in the classroom / Creation or evolution: what should we believe? / The rocks and the fossils: what should we believe? / Genesis and genetics: what should we believe?

Dr Marc Surtees (Edinburgh)

The God delusion? / Whales: created or evolved? / Are humans evolved apes? The origin of life / Did birds evolve from dinosaurs? / Fossils: what do they really mean? / Evidence for a young earth / Was the eye designed?

Dr William Worraker (Didcot)

General astronomy / Age and formation of the solar system / Astronomy of stars and galaxies / Cosmology / Existence (or otherwise) of life in space and related topics.

We hope that the availability of new speakers in different parts of the country, and the new topics they can offer, will encourage supporters outside our usual circles to host a meeting. We simply ask that inviting churches cover the speaker's expenses and consider an additional donation to BCM in the usual way. To book one of the speakers please make contact via with us as soon as possible on 01353 721578. ■

Obituary

We wish to share the sad news of the death of Professor Terry Hamblin, one of the esteemed vice-presidents of BCS in January of this year. He was a former consultant Haematologist, Royal Bournemouth Hospital, Professor of Immunohaematology at the University of Southampton and Honorary Consultant haematologist at Kings College Hospitals, London. The British Journal of Medicine (BMJ 2012;344:e2287) had this to say:

> "But no one who knew Hamblin as a doctor or a colleague or a friend has any doubts about his medical contributions. Hamblin spent his adult life providing quality caring treatments for his many patients and conducting important medical research….. Hamblin's Christian faith was a major part of his life. He served as vice-president of the Biblical Creation Society and spent more than 20 years in leadership at Landsdowne Baptist Church in Bournemouth as deacon, elder and lay preacher."

He has been a supporter of the BCS since its earliest days and wrote the article *Haemoglobin and the Chemistry of Blood* for us in Biblical Creation Issue 10.

He trained in medicine and was appointed as a haematologist in Bournemouth in 1974. Over the following 29 years he built up the clinical and research facilities there from a small laboratory. He specialised in cancers of the blood, in particular chronic lymphocytic leukaemia, helping to pioneer new treatments including DNA vaccines.

In December 2005 he started a blog with the title: *mutation of mortality- Random thoughts of Terry Hamblin about leukaemia, literature, poetry, politics, religion, cricket and music.* The family are keeping it " live and accessible on the internet ad infinitum" http://mutated-unmuated.blogspot.co.uk/

We extend our condolences to his family and friends and pray that his Christian life as a leading scientist of our times will inspire others to follow in his footsteps. To quote from his article in Biblical Creation 10:

> "Blood is an extremely complex tissue, not at all like the tomato ketchup that issues from the vest of the television cowboy…. The design of this material is delicate and exquisite and not to be tampered with. The more one learns of our Creator, the more we are in awe." ■

N. Darrall

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The Biblical Creation Society
Upholding the Bible's teaching on origins

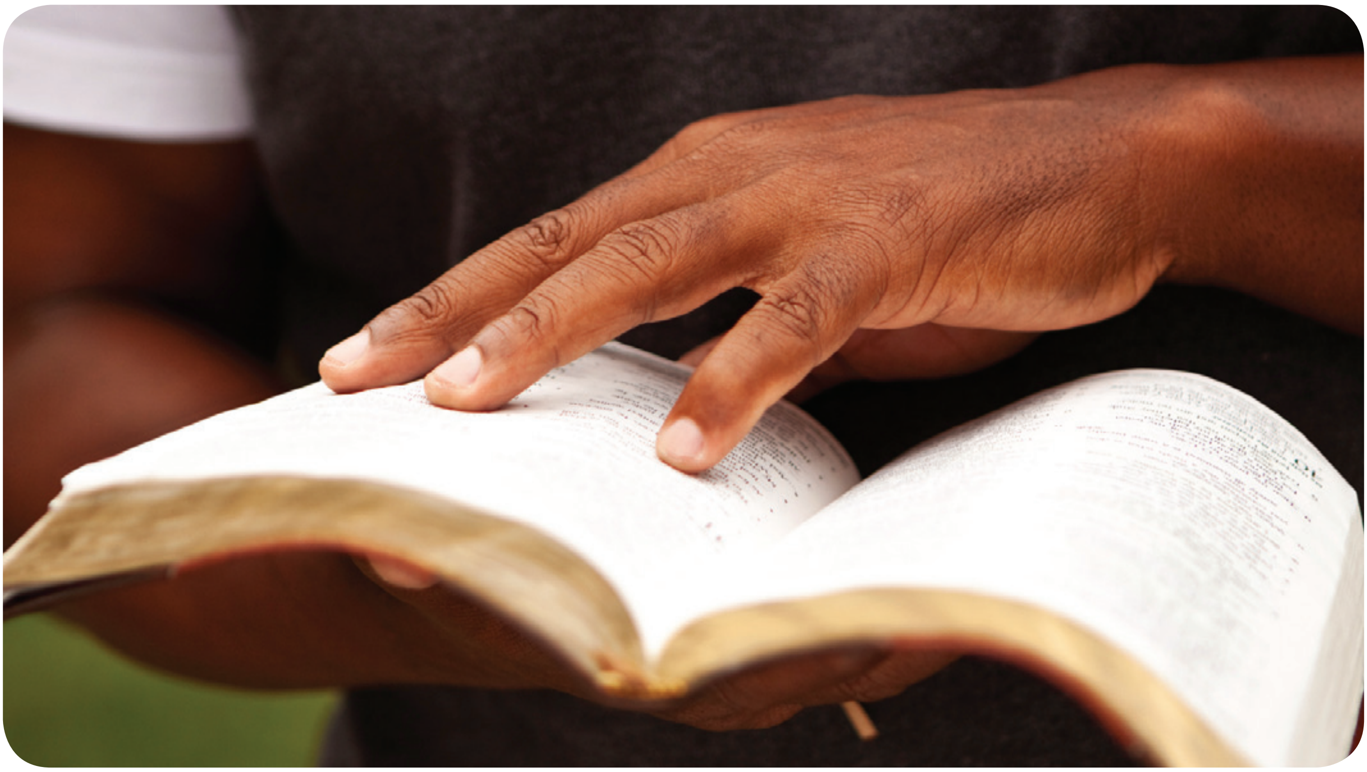
Adam: the Priest-King of Genesis 1 to 3

Ray Trainer

When we come to read and study Genesis 1 to 11 it is important for us to realise that the Bible is, first and foremost, not about science or history but about theology. Though the stories found within these early chapters of Genesis are certainly true and accurate, yet their primary purpose is theological. Therefore, if we place too much emphasis on the science and history underlying Genesis 1 to 11, we can be in danger of an imbalanced exegesis. In fact this is true of all portions of Scripture which document historical events for us whether from Genesis or elsewhere within the Bible. The *primary* intent of the authors of these accounts is not to record reliable information concerning what happened, which of course they do, but to bring out theological truth relating to the overarching storyline of the Bible.

> “Effectively Adam and Eve were to extend the boundaries of the Garden of Eden until the temple-garden covered the whole earth …”

Now the Bible, though written over many hundreds of years by numerous human authors, is one book with one divine author and one overall subject. That subject is: “Jesus Christ and the salvation God offers through him” (Roberts, 2002:7); see also Luke 24:25-27, 44; 2 Corinthians 1:20; 2 Timothy 3:15f). The unity of the Bible – that it is indeed one book – can be clearly seen when we compare Genesis 1 to 3 with Revelation 20 to 22. In doing so we find that ideas and themes introduced to us within the account of the first creation are brought to completion within the account of the second creation. In other words, those early chapters of Genesis and those final chapters of Revelation *frame* the entire Bible (Alexander, 2008:10). With that in mind, my intention in this article is to consider two of those biblical themes



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